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Theoretical Prediction of Interference Loading on Aircraft Stores: Part I – Subsonic Speeds

The problem:

Accurate prediction of interference loads on pylon-mounted aircraft stores.

The solution:

A computer program designed to calculate store moments of subsonic speeds.

How it's done:

A method is developed for theoretically predicting the loading on pylon-mounted stores in subsonic compressible flow. Linear theory is used, without two-dimensional or slender body assumptions, to predict the flow field produced by the aircraft wing, nose, inlet, and pylons. The interference loading is integrated over the store length by considering the local crossflow, its axial and radial derivatives, and buoyancy. Store moment calculations under an F-4 aircraft at Mach 0.8 are compared to wind tunnel data. A companion Tech Brief (see notes) discusses a similar program for supersonic speeds.

Notes:

1. This program was written in FORTRAN IV for the CDC-6000 computer.
2. Reference: Theoretical Prediction of Interface Loading on Aircraft Stores, Part II – Supersonic Speeds, NASA Tech Brief B73-10183.
3. Inquiries concerning this program should be directed to:

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